645

Z. Zerror

## RECEIVED

## AUG 2 7 2002

## TECH CENTER 1600/2900

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/705,911

DATE:/08/22/2002 TIME: 10:35:18

```
1 <110> APPLICANT: Hermon-Taylor, John
        Doran, Tim
 2
         Millar, Douglas
 3
         Tizard, Mark
 5
        Loughlin, Mark
         Sumar, Nazira
  <120> TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES AND POLYPEPTIDES IN PATHOGENIC
         MYCOBACTERIA AND THEIR USE AS DIAGNOSTICS, VACCINES AND
         TARGETS FOR CHEMOTHERAPY
 9
10 <130> FILE REFERENCE: 117-260
11 <140> CURRENT APPLICATION NUMBER: 09/705,911
12 <141> CURRENT FILING DATE: 2000-11-06
14 <150> PRIOR APPLICATION NUMBER: US/09/091,538
15 <151> PRIOR FILING DATE: 1998-09-16
18 <150> PRIOR APPLICATION NUMBER: PCT/GB96/03221
19 <151> PRIOR FILING DATE: 1996-12-23
20 <150> PRIOR APPLICATION NUMBER: GB 9526178.0
21 <151> PRIOR FILING DATE: 1995-12-21
22 <160> NUMBER OF SEQ ID NOS: 41
23 <170> SOFTWARE: PatentIn Ver. 2.0
25 <210> SEQ ID NO: 1
26 <211> LENGTH: 674
27 <212> TYPE: DNA
28 <213> ORGANISM: Mycobacterium
29 <400> SEQUENCE: 1
30
         gatccaacta aacccgatgg aaccccgcgc aaactattgg acgtctccgc gctacgcagt 60
31
         tgggttggcg cccgcgaatc gcactgaaag agggcatcga tgcaacggtg tcgtggtacc 120
32
         gcacaaatgc cgatgccgtg aggaggtaaa gctgcgggcc ggccgatgtt atccctccgg 180
33
         ccggacgggt agggcgacct gccatcgagt ggtacggcag tcgcctggcc ggcgaggcgc 240
         atggcctatg tgagtatccc atagcctggc ttggctcgcc cctacgcatt atcagttgac 300
34
35
         cgctttcgcg ccacgtcgca ggcttgcggc agcatcccgt tcaggtctcc tcatggtccg 360
36
         gtgtggcacg accacgcaag ctcgaaccga ctcgtttccc aatttcgcat gctaatatcg 420
37
         ctcgatggat tttttgcgca acgccggctt gatggctcgt aacgttagca ccgagatgct 480
38
         gcgccactcc gaacgaaagc gcctattagt aaaccaagtc gaagcatacg gagtcaacgt 540
         tgttattgat gtcggtgcta actccggcca gttcggtagc gctttgcgtc gtgcaggatt 600
39
40
         caagageegt ategttteet ttgaacetet tteggggeea tttgegeaac taaegegeaa 660
                                                                            674
41
         gtcggcatcg gatc
43 <210> SEQ ID NO: 2
44 <211> LENGTH: 674
45 <212> TYPE: DNA
46 <213> ORGANISM: Mycobacterium
47 <400> SEQUENCE: 2
         gatccgatgc cgacttgcgc gttagttgcg caaatggccc cgaaagaggt tcaaaggaaa 60
```

RAW SEQUENCE LISTING DATE: 08/22/2002 PATENT APPLICATION: US/09/705,911 TIME: 10:35:18

```
cgatacggct cttgaatcct gcacgacgca aagcgctacc gaactggccg gagttagcac 120
49
         cgacatcaat aacaacgttg actccgtatg cttcgacttg gtttactaat aggcgctttc 180
50
         gttcggagtg gcgcagcatc tcggtgctaa cgttacgagc catcaagccg gcgttgcgca 240
51
         aaaaatccat cgagcgatat tagcatgcga aattgggaaa cgagtcggtt cgagcttgcg 300
52
         tggtcgtgcc acaccggacc atgaggagac ctgaacggga tgctgccgca agcctgcgac 360
53
         qtqqcqcqaa agcgqtcaac tgataatqcg tagggqcgag ccaagccagg ctatgggata 420
54
        ctcacatagg ccatgcgcct cgccggccag gcgactgccg taccactcga tggcaggtcg 480
55
         ccctacccgt ccggccggag ggataacatc ggccggcccg cagctttacc tcctcacggc 540
56
         ateggeattt gtgeggtace acgaeacegt tgeategatg ecetetttea gtgegatteg 600
57
58
         cqqqcqccaa cccaactqcq tagcqcqqaq acqtccaata gtttqcqcqg ggttccatcg 660
                                                                            674
59
         ggtttagttg gatc
61 <210> SEQ ID NO: 3
62 <211> LENGTH: 7995
63 <212> TYPE: DNA
64 <213> ORGANISM: Mycobacterium
65 <400> SEQUENCE: 3
         qaattctqqq ttqqaqacqa cqtcqaactc ctqqtcqqtc ttqcttcqaa tqatcqctqt 60
66
67
         gatctggtcg gcggtgccga caggaaccgt cgacttgtcg acgatcacct tgtaccggtc 120
         gatgtatgac ccaatgtcgt ccgcaaccga gaagacgtac gtcaggtccg ccgcccgct 180
68
         ttcacccatg ggcgtcggga cggcgatgaa aatgacgtcc gcgtgctcga ttccgcgttg 240
69
         ccggtcggtg gtgaagtcaa tcagcccgtt ctcacggttc ctcgcaatca actcccaacc 300
70
         cgggctcgaa aatcgggaca ctgcctgcga ggagcaaatc gatcttggcc tgatcgatat 360
71
         cqacacagac gacatcgttg ccgctatccg cgagacaggc gcccgtgacg aggcctacat 420
72
         agcctgatcc gaccaccgaa attttcaaga tgaccccttc aagtccccga tcggtcgacg 480
73
74
         accatactgc cgcaactctg taccctccgt gggtaattcg catgtcgcgt tcgtaaggag 540
         cagccagcga gtcggggacg ttcggtgaga gagtcgcagg actacgaggt tgccggtgcg 600
75
         atacatcaca gtgttgcgtc tgtcggcaac gatgcagcaa gaacccacgg ggcagccctg 660
76
         aactgcgcgc atgaccggtc cttgtcctgg cacctttgat cggccaccgc ttccatgcga 720
77
         acatgaccgg aatccatagc gcgtggtcaa gcagcgggga ggtagacgtc ggtgtcatct 780
78
79
         qctccaaccq tgtcggtgat aacgatttcg ctgaacgatc tcgagggatt gaaaagcacc 840
        gtggagagcg ttcgcgcgca gcgctatggg gggcgaatcg agcacatcgt catcgacggt 900
80
         ggatcgggcg acgccgtcgt ggagtatctg tccggcgatc ctggctttgc atattggcaa 960
81
         tctcagcccg acaacgggag atatgacgcg atgaatcagg gcattgccca ttcgtcgggc 1020
82
83
         gacctgttgt ggtttatgca ctccacggat cgtttctccg atccagatgc agtcgcttcc 1080
         gtggtggagg cgctctcggg gcatggacca gtacgtgatt tgtggggtta cgggaaaaac 1140
84
         aaccttgtcg gactcgacgg caaaccactt ttccctcggc cgtacggcta tatgccgttt 1200
85
86
         aagatgcgga aatttctgct cggcgcgacg gttgcgcatc aggcgacatt cttcggcgcg 1260
87
         tegetggtag ceaagttggg eggttaegat ettgattttg gaetegagge ggaecagetg 1320
88
         ttcatctacc gtgccgcact aatacggcct cccgtcacga tcgaccgcgt ggtttgcgac 1380
         ttcgatgtca cgggacctgg ttcaacccag cccatccgtg agcactatcg gaccctgcgg 1440
89
         cggctctggg acctgcatgg cgactacccg ctgggtgggc gcagagtgtc gtgggcttac 1500
90
         ttqcqtqtqa aqqaqtactt gattcqgqcc gacctgqccg cattcaacgc ggtaaagttc 1560
91
         ttgcgagcga agttcgccag agcttcgcgg aagcaaaatt catagaaacc aacttctact 1620
92
         gcctgacctg agcagcgccg aggcgcgcag cgcgatcagt gcgacctgaa cggccaggtg 1680
93
         gaaagcgcca ccgatcccgg caccgagtgc ctgacgcttc ggatcccttg caccacacg 1740
94
         agagtgagag cgccatgatg aggaaatatc ggctgggcgg agtcaacgcc ggagtgacaa 1800
95
         aagtgagaac ccggtgaagc gagcgcttat aacagggatc acggggcagg atggttccta 1860
96
         cctcgccgag ctactactga gcaagggata cgaggttcac gggctcgttc gtcgagcttc 1920
97
         gacgtttaac acgtcgcgga tcgatcacct ctacgttgac ccacaccaac cgggcgcgcg 1980
98
```

RAW SEQUENCE LISTING PATENT APPLICATION: US/09/705,911

DATE: 08/22/2002 TIME: 10:35:18

Input Set : N:\Crf3\RULE60\09705911.raw
Output Set: N:\CRF4\08222002\I705911.raw

99 cttqttcttq cactatgcag acctcactga cggcacccgg ttggtgaccc tgctcagcag 2040 tatcgacccg gatgaggtct acaacctcgc agcgcagtcc catgtgcgcg tcagctttga 2100 100 cgagccagtg cataccggag acaccaccgg catgggatcg atccgacttc tggaagcagt 2160 101 ccgcctttct cgggtggact gccggttcta tcaggcttcc tcgtcggaga tgttcggcgc 2220 102 103 atctccqcca ccgcagaacg aatcgacgcc gttctatccc cgttcgccat acggcgcggc 2280 caaggtette tegtactgga egactegeaa etategagag gegtaeggat tattegeagt 2340 104 105 qaatqqcatc ttqttcaacc atqagtcccc ccggcgcggc gagactttcg tgacccgaaa 2400 106 gatcacgcgt gccgtggcgc gcatccgagc tggcgtccaa tcggaggtct atatgggcaa 2460 cctcgatgcg atccgcgact ggggctacgc gcccgaatat gtcgagggga tgtggaggat 2520 107 gttgcaagcg cctgaacctg atgactacgt cctggcgaca gggcgtggtt acaccgtacg 2580 108 tgagttcgct caagctgctt ttgaccatgt cgggctcgac tggcaaaagc gcgtcaagtt 2640 109 tgacgaccgc tatttgcgtc ccaccgaggt cgattcgcta gtaggagatg ccgacaaggc 2700 110 qqcccaqtca ctcqqctqqa aaqcttcqqt tcatactqgt qaactcqcqc gcatcatggt 2760 111 qqacqcqqac atcqccqcqt tqqaqtqcqa tqqcacacca tggatcgaca cgccqatgtt 2820 112 gcctggttgg ggcagagtaa gttgacgact acacctgggc ctctggaccg cgcaacgccc 2880 113 gtgtatatcg ccggtcatcg ggggctggtc ggctcagcgc tcgtacgtag atttgaggcc 2940 114 115 qaqqqqttca ccaatctcat tqtqcqatca cqcqatgaga ttgatctqac ggaccgagcc 3000 116 gcaacgtttg attttgtgtc tgagacaaga ccacaggtga tcatcgatgc ggccgcacgg 3060 gtcggcggca tcatggcgaa taacacctat cccgcggact tcttgtccga aaacctccga 3120 117 118 atccagacca atttgctcga cgcagctgtc gccgtgcgtg tgccgcggct ccttttcctc 3180 ggttcgtcat gcatctaccc gaagtacgct ccgcaaccta tccacgagag tgctttattg 3240 119 120 actggccctt tggagcccac caacgacgcg tatgcgatcg ccaagatcgc cggtatcctg 3300 caagttcagg cggttaggcg ccaatatggg ctggcgtgga tctctgcgat gccgactaac 3360 121 ctctacggac ccggcgacaa cttctccccg tccgggtcgc atctcttgcc ggcgctcatc 3420 122 cgtcgatatg aggaagccaa agctggtggt gcagaagagg tgacgaattg ggggaccggt 3480 123 actecgegge gegaacttet geatgtegae gatetggega gegeatgeet gtteettttg 3540 124 gaacatttcg atggtccgaa ccacgtcaac gtgggcaccg gcgtcgatca cagcattagc 3600 125 126 qaqatcqcaq acatqqtcqc tacaqcqqtq qqctacatcq qcgaaacacq ttqgqatcca 3660 127 actaaacccg atggaacccc gcgcaaacta ttggacgtct ccgcgctacg cgagttgggt 3720 tggcgcccgc qaatcgcact qaaaqacggc atcgatgcaa cggtgtcgtg gtaccgcaca 3780 128 129 aatgeegatg eegtgaggag gtaaagetge gggteggeeg atgttateee teeggeegga 3840 130 cgggtggggc gacctgccgt cgagtggtac ggcagtcgcc tggccggcga ggcgcgtggc 3900 131 ctatgggagt atccaatagc ctggcttggc tcgcccctac gcattatcag ttgaccgctt 3960 132 tegegeeage tegeaggett geggeageat ecceptteagg teteeteatg gteeggtgtg 4020 gcacgaccac gcaagctcga accgactcgt ttcccaattt cgcatgctaa tatcgctcga 4080 133 tggatttttt gcgcaacgcc ggcttgatgg ctcgtaacgt tagtaccgag atgctgcgcc 4140 134 135 acttcgaacg aaagcgccta ttagtaaacc aattcaaagc atacggagtc aacgttgtta 4200 ttgatgtcgg tgctaactcc ggccagttcg gtagcgcttt gcgtcgtgca ggattcaaga 4260 136 137 gccgtatcgt ttcctttgaa cctctttcgg ggccatttgc gcaactaacg cgcaagtcgg 4320 138 categgatee actatgggag tgteaceagt atgeectagg egacgeegat gagaegatta 4380 139 ccatcaatgt ggcaggcaat gcgggggcaa gtagttccgt gctgccgatg cttaaaagtc 4440 140 atcaagatgc ctttcctccc gcgaattata ttggcaccga agacgttgca atacaccgcc 4500 141 ttgattcggt tgcatcagaa tttctgaacc ctaccgatgt tactttcctg aagatcgacg 4560 tacagggttt cgagaagcag gttatcacgg gcagtaagtc aacgcttaac gaaagctgcg 4620 142 tcggcatgca actcgaactt tcttttattc cgttgtacga aggtgacatg ctgattcatg 4680 143 aagcgcttga acttgtctat tccctaggtt tcagactgac gggtttgttg cccggcttta 4740 144 cggatccgcg caatggtcga atgcttcaag ctgacggcat tttcttccgt ggggacgatt 4800 145 qacataaatg ctccgtcggc accctgccgg tatccaaacg ggcgatctgg tgagccggcc 4860 146 147 tecegggeae etaategaet atetaaattg aggeggeege gaegtgegge aegaaeaggt 4920 RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/705,911

DATE: 08/22/2002 TIME: 10:35:18

148ggccggctgct tagcgttaca cacgtcatga ctgcgccagtgtttcgata attatccta 4980150gggaagtgaagcgtgtagcggttcgacgagtcgtcgtgagatgtcggag5100151acagtttcegcctgagactcggctgcggctggtgttcacaggagcctcgattagggc5100152cctacagagccatgaaccacggctgcggctggtgttcacaggagcctcgattagggc5100153gcgccgacgacaccatctacgaaccaaccagtttgtgcaggtagccgctgtttttttag521153gcgccgacgacaccatcttgttagtggcgtttgtgcaggtagccgctttttttag5280155atgccggactttttgacctgaccgccttctattttgaggatttttgtacaccaactggtaccactggc5400155tcttttaccgggtgtttttgataccactgcctaccactggctaccactggctaccactggctaccactggctaccactggctaccactggctaccactggctaccactggctaccactggctaccactggctaccactgcatgttaccactgagtcggcgctgtttaccactgcatgttaggagctggcaggcactgtcaggcactgtcggcgcagacaggcagcagacaggcagagacaggcagagagagacaggcagagagagagagagagagagagagagagagagag								4000
gggaagtgga agtggtectt gtegaeggg gttegaecga teggaecet gaaategegs 5100 152 cetacgaege catgaacece ggeegeege tggeeage gaategggee 5100 152 cetacgaege catgaacece ggeegeege tggeeage gaategggee 5100 153 gegeegaega caecectetae gaeceaeae egtggeeee ggtaegeeg 5280 154 accateggge aagecaette gtetatggea gtgtegeeg gtgaegeege 5280 155 atgeeggae tttegaect gaeceaeae egtggeeee ggtaegeege 5280 156 tettttaceg eegtgagett ttegaegegae teggeeetta caecetgee taeceaege 5400 157 gggeggaetg ggaettecaat attegetget tetecaaece ggegeegtat accegegate 5400 158 tggaecyteg ggaettecaat attegetget tetecaaece ggegeggaeggeeggeeffeel 158 tggaecyteg ggaettecaat attegetget tetecaaece ggegetgat accegegae 5580 159 ataaagagtt cagaaaaegg etgeeaaag gaaategeeg teggeetgatt accegetae 5580 159 ataaagagtt teggaaaaegg etgeeaaag gaaategeeg teggeetgatt accegetae 5580 160 ggeegatge gggtttttg aaagaeaaga gaageegaa acgggteg eggaaceae 5760 161 ttggaacttet ttaacgegtt tgegteetga tecaaectte aageeggte ceggaaage 5800 162 ttggaettet ttaacgegtt tgegteetga tecaaectte aageeggte ceggaaageg 5800 163 ggeegeaga gatggtiege atategeate acceptete aageeggte ceggaaegg 5800 164 cgaagaacte ggtteggt etgegea eeggaaaggt teagaegg 5800 165 gaetgaage aatgagtgae aateggeegt gegaaaggtt teagaegggg 5800 166 cacegeaaga etaetggaf gegyeaeaa ggeeceeae etgeggggg 6800 167 caaagggatt cgaagettga geaaaetgeeg gegaaaggtt teagaeggaf 6000 168 ggtttetgat cegegeega atgaeggegg tgggeaa gggeeceagg tggggaae 6000 169 ggaageaga teggeageg tgggaeggggggggggggg								
acaptticog ocogaacic ggoteggae tggtegtea eagegggee gatgategge 5160 cetacgaege catgaacege ggoteggee tggceacage cgatgatggee 5160 ggocegaega caccetctae gaaceaacea cgttggeea ggtagegget tttetegge 5280 accatgegge aagecatett gtetatggee steepesche tettegaegea ttetgaegea tggeeatea eagetgeet tteteggeg 5280 tettttaege cettegaecte gaccetce tattgaage gaatttgtge caccaatega 5400 tettttaege cgtgagett ttegaeggea teggeeate eagetgeet taccaatega 5400 tettttaege ggaatteaa attegetget tetecaacee ggegetgat accagatgag 5400 tetttaege ggaatteaa attegetget tetecaacee ggegetgat accagatgag 5400 staaagagatt cagaaaaegg etgecaatgt gaccetce tettggeettg eagetgatg 5580 ggogeggeettg ggattteogaa tacaacagaa agaacegeet tetggeettg gatgagggef 5580 ggogeggeettg ggottttg aaagacaagg agaceggeet teggaagggg gaggggef 5580 staaagaggt taaggeegte tecaaagaac gaagegeega accgtagtge ggaggetgs 5580 sgogegegaga gagtgtege atategeate actgteteg teggaegggg ggaggeggg 5580 sgogegegaga gagtgtege atategeate actgteteg teggaegget ggaageggef 5790 tegataaagget ttagageegt teggaegae accgtageggg agaceggef 5790 sgogegegaga gagtgtege atategeate actgteteg teggaegget ggaageggef 5880 ggogegegaga gagtgtege atategeate actgteteg tgecagtget tggaaageg 5880 ggogegeaga agagtgtege atategeate actgteteg tgecagtget tggaaagegf 5880 acacgaagaet ceaactege agaggaga aggaagaga ggecatgatg ggetggaagg 6000 caccgaagag catagtggag aggaggagggaggaaggaggagagga								
cctacgacge catgacacge ggctcggg tggccacagg cgastggta cttttttaf 5220 ggcgcagac caccetctac gaaccacca cgttggccca ggtagccgct tttctcgggc 5280 154 accatgcggc aagccatctt gtctatgggg atgttgtgat gcgttcgacg 340 155 atgccggact tttcgactt gaccgcctc tatttgag cgtttgaga gaatggggc3340 156 tcttttacg cgttgagtt ttcgagact atgttgtgat gcgtttgaga gaatgcags 5340 157 gggcggactg ggacttcat attcgtgct tttccaacc ggcgctgatt acccggtct 5460 158 tggacgtcgt gatttccgaa tacaacgaca tgaccggctt caccaagtgac 5520 159 ataaagagtt cagaaaacg ctgccaatgt acttctgggt tgcagggggggggg								
gegecgaega caccettae gaaccaacca egttggecea ggtagecget titteteggeg 5340 atgeogaec tittgacete gaecgecte tattigagae gaattigtge aatgeegges 5340 tetttaeg egtgagett tegacete gaetgeeget eatgegeete caccaatega 5400 tetttaeg ggeggaett tegacete gaetgeegete caccaatega 5400 tetttaeg ggeggaett tegacete gaetgeegete eatgegegete gggeggaggaetg 5540 gggeggagtg ggaetteaat attegtget tetecaacce gggegetgatt accagagtes 5520 tggaegtet gattieegaa tacaacgaea tagacegget cagagagag caggggaetg 5580 ggegegaetge ggegtittt aaagacaaga gaategeeg tetiggeetg eatgagaggaetg 5580 ggegegaetge ggegtittt aaagacaaga gaategeeg tetiggeetg eggagaggaggaetg 5580 tggaegeaga gagtggtee tecaaagaac eatgagaggaetg eatgagaggaetg 5580 ggegegaag gagtggtege atateggaet ecacette aggeeggeeggaetgeeggeeggeeggeeggeggeggaggggaggagggag								
accategoge aspocatett gtetatgoge atgitiggat gogiticgaeg aasageegge 5400 tetittaceg cettgagett tiegaeggea teggeectta caacetgege taccgagett 5460 tetittaceg cettgagett tiegaeggea teggeectta caacetgege taccgagett 5460 teggeggaetg ggaetteaat attegetget tetecaacec ggegetgatt accegetaes 5520 tiggaeggaetg ggaetteaat attegetget tetecaacec ggegetgatt accegetaes 5520 tiggaeggaetg ggaetteaat attegetget tetecaacec ggegetgatt accegetges 5580 tiggaeggaetg ggaetteeggaetgaetgaetgaetgaetgaetgaetgae								
atgocggace thtegacete gacegoctec tathigagae gaathigtige caccaatega 5460 gggoggactg ggachteaa attagotget tetecaacee ggcgetgat accegated 5460 gggoggactg ggachteaa attagotget tetecaacee ggcgetgat accegatea 5520 tggacgtget gathteegaa tacaacagaca tgacegotte cagcatgagg cagggagas 5580 ggcgatget ggcgthttg acaacagga tgacegotte cagcatgagg gagactigea 5540 ggcgcatget ggcgthttg aaagacaagg agaategeeg tetggcettg cagcatgagg gagactigea 5540 tgataagggt taaggcegte tecaaaagaac gaagacgaga accgtagteg eggacteaca 5760 tgataaagggt taaggcegte tecaaaagaac gaagacgaga accgtagteg eggateaca 5760 tgataaagggt taaggcegte tecaacatte acacctite aagaccgite cegetaace 5820 taggacgcaga gagtggteg attacgact actgiteteg tecaacettet aagaccgite cegetaace 5820 ggcgcagaa gagtggteg attacgagte ggcgccgcte ctagaaggtag eggtgtacaca 5760 caccgcaaga ctactggagt gcgtgacaa accggacggt tggaaaaggt tggaagaggg tggaacaggag 6000 acccgcaaga ctactggagt gcgacaaaggt teaggaggag ggcggggaga 6000 acccgcaaga ctactggagt gcgacactga gagaggagaa eggcctatga ggctggaca 6120 ggttticgat eccacctec gtgcgggtgg ttggccaaa tagaagtee cgctggtgge 6180 cagcagaaagt eccaactecg etgggggtgg ttggctegg cagagatege cgctggtgg 6300 tro ggtcgggegt gcgcatcegg taggactege eggaggtgg cagagatege eccattette 6240 ggacaggagg atggaggg atggcggggggggggggggg								
tettttaceg cegtgagett ttegaeggea teggecetta eaacetgege taceggaget 5520 tggaegteg ggaetteaat attegetget tetecaacec ggegetgatt accegetaca 5520 tggaegtegt gatttecgaa taceaacgaca tgaecagec gegegetgatt accegetaca 5520 ataaaagagtt cagaaaacgg ctgccaatgt acttetgggt tgaegggtg gagacttga 5580 ggegeatget ggegtttttg aaagcaagg agaategeeg tetggeettg cgtaegeggf 5700 l61 tgataagggt taaggeegt tecaaagaac gaagegeaga accegtagteg cgtaecageg 5700 l61 tgataagggt taaggeegt tecaaagaac gaagegeaga accegtagteg cggatecaca 5760 l62 ttggacttet ttaaeggett tgegteettg tecacettte aaagceegtte eggacageg 5880 l63 ggeegeaga gagtggtege attacgaat actftetegt tgecagtget tggaaaggef 5880 l64 cgacactet ggttegett ettgaegtte gegacaget teaggegte tggaaaggef 5880 l65 gaetgaagec aatgagtgea actggegte gegaaaggtt teagtgeggg ttgaaaga 6000 l66 cacegeaaga ctactggagt gegtgcacaa gegectecag etcgegggtg tagaaaggggaa 6000 l66 cacegeaaga ctactggagt gegtgcacaa gegectecag etcgeggggg aggettegg ggtttegat cegaeggggg atggttega daggaegga acggetgaga 6120 l68 ggttttegat eeggeegga atgaeactge aaggggagaa cggccataga ggetgggaa 6120 l70 ggteggegtg gegeateegg taggaectec eggaggtgt ttggcgagt ggetgggaa 6130 l71 geagecgate gaggategg tgggegggg ttggetaatt ettggegget eccetattgt 6240 l70 ggteggegtg gegeateegg taggeeaggg gtgggagggaa geggagggagggaa gegaggegga ggaagaggaa etcaagagga 6480 l72 cgaagggeca atgagteeg gggtgegggggggggggggggggggggg								
157 ggggggactg ggatttcaat attegetget tetecaaece ggggetgatt accegetaca 5520 159 ataaagagtt cagaaaacag togecaatgt actetgggt togecatgatgatgatgatgatgatgatgatgatgatgatgatga								
tggacgtcgt gatttccgaa tacaacgaca tgaccggctt cagcatgagg caggggactg 5580 ataaagagtt cagaaaacgg ctgccaatgt acttctgggt tgacgtggg gagacttgc 5640 ggcgcatgct ggcgtttttg aaagacaagg agaatgccg tctgacgtg cggaacttgc 5640 162 ttggacttct ttaacgggtt tccaaagaac gaagcgcaga accgtagtcg cggatccaca 5760 162 ttggacttct ttaacgggtt tggcgccgta cccactttc aagccgttc cggaacgcg 5820 163 ggcgcgaga gatgggca atatcgcate actgtctcg tgccagttc tggaaaggt 5880 164 cgagcactct ggttcgggt cttgacgtc ggcaaaggt tcagtggtg tggacgaa actgggggacg caacggggaga catacggaggaga cggaaaggt tcagcggga atatcggcag ggcaaaggt tcagcggga atatcggcag ggcaaaggt tcagtgggag cggaaggggaga cggcgggggggggg								
ataaagagtt cagaaaacgg ctgccaatgt acttctgggt tgcaggtgg gagacttgca 5640 ggcgcatgt ggcgtttttg aaagacaagg agaatcgceg tctggccttg cgtacgcggt 5700 161 tgataagggt taaggccgtc tccaaaagaac gaaacgccgaa accgtagtcg cggatacgcg 5700 162 ttggacttct ttaacgcgtt tgcgtcctga tccaactttc aagcccgttc cgcgtaacgc 5820 163 ggcgcgcagg agatggtcgc atatcgcatc actgttctcg tgccatgtgt tggaaagcgt 5820 164 cgagcactct ggttcgcgtt cttgacgttc gcgcaacgtt tgagcaagg 5820 165 gactgaagcc aatgagtgca actcgcgtc gcgaaaggtt tcagtgcggt tggacaacg cgcccccad ctcgcggtgt tgagcaacg cgcgcccad ctaggagtgg 6000 167 caaagggatt cgaagcttga gcaacatgcg aagggggaa cggcctcad cgcgcgtgg aaaggggtg 6060 169 cgagaagt cccactccg ctgcgggtgg ttggccaat ctggcggtg aaaggggtg 6180 169 cggtgggtg gcgcatccgg taggactcg cggaaggtg cgagaatgct cccactcgc cgggggggggg								
161 tgataaggt taaggccgtc tccaaagaa gaategccg tctggccgtc gggatcaca 5760 162 ttggacttct ttaacgcgtt tgcgtcctga tccacctttc aagccggtc gggatcaca 5760 163 ggcgcgaag aggtgtcgc atatcgcatc actgttctg tgccagtct tggaaaggt gggtgtgcg atatcgcatc actgttctg tgccagtgt tggaaaggt gggtgtcaca 5760 164 cgagcactct ggttcgcgt cttgacgtc gcgcagcc ctagaggtg ggtggaag ggtgtgtgg ggcaaaggt ggcgaaaggt taaggcgag actggggag actgggggag actggggag cggaaaggt taaggggag cggtgaaagggag cgggtaaagg 6000 165 caacggaagat cgaagcttga gcaacatgcg aaggggagaa cggcctatg aggcggaag ggtttcgat caacgggagg acggctccag ggttcagga ggcggaagggggggggg								
tigataagggt taaggccgtc tecaaagaac gaagegeaga accgtagtg eggatecaca 5760 ttggacttet ttaacgcgtt tgegtectga tecaacttet gggegeaga aggegeget cggaageget tggacaage 5880 cggegeaga gagtggtege atategeate gegeceget ctagaggtg gegaagggt tegaaggeggggggggggggg								
ttggacttet ttaacgogtt tgogtectga tecaecttte aagecegtte egegtaaege 5820 gegegegaag agtggtege atateegate acttgteteg tgoeaggtet tggaaagegt 5840 gactgaagee aatgagtgea ettgaegtte gegeaaggtt tegaaagegt 5940 l65 gactgaagee aatgagtgea acteeggege gegaaaggtt teagteegg ttggaaagg 6000 l66 caecegeaaga etactggagt gegtegaaea gegeeteeag etgecatgta aageggaga 6120 l68 ggttttegat eegeegega atgeaetgte aatggeeaga eggeetatge ggettggaeae eggeegggtg ttggetaatt etggeggeg eggeagggggggggg	160							
ggcgcgcaga gagtggtcgc atategcatc actgttctcg tgccagtgct tggaaagggt 5880 164 cgagcactct ggttcgcgtt cttgacgttc gcgccgccc ctagaggtag cggtaccgt 5940 165 gactgaagcc atagagtga actcggcgtc gcgcaaaggtt tcagtgcgg ttggacaga 6000 166 caccgcaaga ctactgggt gcgtgcacaa gcgcctccag ctcgcggctg aaaggggag 6060 167 caaagggatt cgaagcttga gcaacatgcg aaggggaaa cggcctatga ggctgggaca 6120 168 ggttttcgat cgcgcgcga atgaccgtg atggcaaga cggcctatga ggctgggaca 6120 169 cagcagaagt ccccactccg ctgcgggtgg ttggcaaga cggcctatga ggctggggaca 6120 170 ggtcggcgtg gcgcactccg tagggactcg cggaggtgac gacgatgctg gcgtggtgac 6300 171 gcagccgatc gaggatgctg gcgggtggg ttggctaatt cttggcggct cccttcttgt 6240 172 cgaagggca atggcagggg gggggggggggggggggaa gcggatgcg cccattgt 6360 173 ggaacaacag ttgagtcccg gtgtgtcga gaggaggac gccactaga gccacagagcc 6420 174 ccagatccgc gcggaggag gtgtgtcgaa gcggggggaa gccacagagcc 6420 175 ggtagaggac ctcgatcagg tcggcgagg gtgtgtcgaa gcgaattcg tccaagatga 6480 176 cggcaggtg cccgcaagcag gtgtgatga tcttgccag ggtgttgtgg gccaggggga 6790 176 cggcaggtg cccgcagccg atgagcaggt gactttgac ggggcgtg gggcgaatgag gggcaatga cgggcgtgg 6790 177 ccgccaggtt ctgttgtgc cgaatccatt ccaggctga acggtagtcg acgggtgtg 6790 178 cggctttga gagtgggg gtgttggagg actttgac ggggaggga acggtttga acggtggtg 6790 179 cggccttga gagtgtggg gcaatccatt ccaggctgg acggttcg acggtgtgg 6780 180 acgtccgcag gcgcaccgg gcaccggg gtgtgcacc gggggggg ggagatctcg gggaaggtg 6780 181 cggcgttgc gcgcacggg gccaccag ggtgccaccag ggtggcggg gggggggggg	161							
cgaccactc ggttcgggtt cttgacgtc gcgaccgctc ctagaggtag cgtgtcacg 5940 165 gactgaagcc aatgagtga actcggggtc gcgaaaggtt tcagtgggg ttgacaaga 6000 166 caccgcaaga ctactggagt gcgtgacaaa gcgcctccag ctcggcggtg aaagcggaga 6120 167 caaagggatt cgaagcttga gcaacatgcg aaggggggaa cggcctatga ggctgggaca 6120 168 ggttttcgat cgcacgcgg atgacatgtc aatggcaag tagaagtcc cgctggtggc 6180 169 cagcagagt ccccactccg ctgcgggtgg ttggctaatt cttggcggct ccctctttt 6240 170 ggtcggcgtg ggcgaccgg taggacacgc cggaggtgg cggaggtgc gcgqtggtgc gcgcatcgg gggaggcggtg gggagggggggggg								
165gactgaagccaatgatgcaactcggcgtcgogaaaggtttcagtcgcgttaagcgaag6000166cacacgcaagactactggagtgogtgcacaagogcctccagctcgcggtgaaagcggaag6060167caaagggattcoaagcgtgaggoaacattgcaaagggagaaacgcctatgaggctgggagaa6180168ggttttcgatcccactccgctgcgggtgtttggctaattcttggcggtcccttcttf6240170ggtcggcgtggcgactccggtaggactcgccggagtgaccggtgtgca6300171gcagcgatcgaggatgctggcggcggtggttgtgctcaatcccttcttf6240172cgaagggcaatggacaggatggccagggaggatgctcgagaatacgcccattgt6360172cgaaggcgaatggacagggtgtcgtcaggggggggaagccaggacgcccactagac6420173ggaacaacagttggtcgcaggtgtgtgcagggtgttftgcggccaggacgc6540174cggaaggcgccggaagcaggtgtcgtgaggtgttftgcggactttgaatccggcgtgg6600175ggtaagggaccgcacggcgatgagcaggtgacttttgccggacaggt6600176cggcacgtgacagttcgggggtgtttgaggcattgggggacggtagtcggggacaggt6780179cggctttgagactcccaggtgtttgagggtttgtgaggcttggtgtctggggacatctggggaagagte6780180acgccttgaggactctctctggttgcaccggcgcgtgggtggtgcacggcgcgtgggcgcgtgggcactcac6900181	163							
caacgcaaga ctactggagt gcgtgcacaa gcgcctccag ctcgcgctg aaagcggatg 6060 167 caaagggatt cgaagcttga gcaacatgcg aaggggagaa cggcctatga ggctgggaca 6120 168 ggttttcgat cccgcgcga atgcactgtc aatggccaag tagaagtcc ccctgtgtgc 6120 169 cagcagaagt ccccactccg ctgcgggtgg ttggctcaatt cttggcggct cccttcttg 6240 170 ggtcggcgtg gcgcatccgg taggactcgc cggaggtgac gacgatcgtg gcgacgacg gaggatgcg gcgggggggggg	164							
167 caaagggatt cgaagettga gcaacatgcg aaggggagaa cggcctatga ggctgggaca 6120 168 ggttttcgat ccgcgcgcga atgcactgtc aatggccaag 169 cagcagaagt cccactccg ctgcgggggg ttggctaatt ctgtggggac ccttttgt 6240 170 ggtcggcgtg gcgcatccgg taggactcgc cggaagtgac gacgatgctg gcgaagtgctg 171 gcagccgatc gaggatgctg gcggcggggg tgtgctcggg gacgaatcgc cccattgtt 6360 172 cgaagggca atgagcagg atggccaggg aggggggaa gccgagacgg cccaaggac 6420 173 ggaacaacag ttgagtcccg gtgcgtcga gcgggggaa gccgatccgg cccaaggac 6420 174 ccagatccgc gcggagagg gtgtgtgatga tcttgccga gggtgtgtg ggaaggagg 175 ggtagaggac ctcgatcagg tcggcgggggggggggg	165	gactgaagcc	aatgagtgca	actcggcgtc	gcgaaaggtt	tcagtcgcgg	ttgagcaaga	6000
168ggttttegatcegegegeaatgeactgteatggecaagtagaagteecegetggtgg6180169cageagaagtceceacteegctgegggtggttggetaattcttgegggtececttettgt6240170ggteggegtggegeatcegetaggaetcegecgagggtgaececeattettg6240171geagecgategaggatgetggeggegtgggttgtegteggcaggaatetggegtggtgtae6360172cgaagggeaatgegaggeatgegegggatgegeggeageageatetegcecaettgt6360173ggaacaacagttgagteeggtgtegtegagegtgttgtegcecaegagec6540174ccagateegctegateaggtettgeegaegaettttgaegecaeggecg6540175ggtaagagaectegateaggtettgeegaegaettttgeegecaeggetgae6600176cegeagegtgcecgeageegatgeegageggaettttgeecaggtatteeceggectgg6720178cegeageegcectttgtgeegettgagagecttgtgtgeecaggtagteecaggtagtee6780179cegeattgaacgtttgeegttttgagggttgegtettggegaetteegecaettee6840180acgteegtgegeceacegtggecaecegaggttgegtettggegaetteegecaectee6840181cegeettgaegeceacegtggecaecegaegettggteetgecaecegaegecgeacteegecgeaceteegeceaceteegecaecegeagecgeaceteegecgeaceteegecgeaceteegegegegetegeageaceteegegegegetegeageaceteegegegegete<	166							
cageagaagt ceccacteeg etgeggtgg ttggetaatt ettggegget cecttettgt 6240 ggteggegtg gegeateegg taggactege eggaggtgae gaegateeg gegtggtgae 63600 geageggae atgegaggeg atggeegggg tgtgteeggg eaggaeteeg eccattgtt 6360 cgaagggea atgegaggeg atggeegggg aggeggege gaageeggee etcaaggae 6420 ggaacaacag ttgagteeg gtgtegtega geggggegaa geegateeg tecaaggae 6480 ceagateege geggageagg gtgtegatga tettgeegae ggtgttgteg geeagggeg 6540 cggaaggge etcgateagg teggeggggg tgaagtageg geegateteg tecaaggtg 6600 cggaaggtg eccepeageeg atgageaggt gaatttgaat eeggegtgg 6600 cggaaggtg eccepeageeg atgageaggt gaatttgaet eeggegtgg 6720 cegeaaggt etgttytgee egaateeatt ecaaggeteg eggaagget gggeaateeg gggeaatega 6660 cggaaggtg ecgeageeg atgageaggt gattttgae eggaeagggggggggg	167	caaagggatt	cgaagcttga	gcaacatgcg	aaggggagaa	cggcctatga	ggctgggaca	6120
170ggteggegtggegcateeggtaggactegeeggaggtgagaegatgteggegtggtgta6300171geageegtegaggatgetgeggegtgtgtytgetegggeaggaategeecceattytt6360172egaaggeeaatgegaggegatgegeggeggegggegeagetageegeagecaegage6420173ggaacaacagttgagteeggetgtegtegagegggegeagecaeteegfeea6480174ecagateegegeggageaggtettgegatgagetttegeaggettttgeeecagateege6540175ggtagaggacecegeageegtettgegeegaettttgeeecagetgtga6600176ecgeagettecgeateegatgaettttgeeeagttagteggggeaategagggeaatega6720178ecgetygategagaeteegtggetyttggaggeateeggggegaatetegaegtggtgee6720179ecgecattgageateegtggetyttggaggeateegggtettygtgacegggaagtgt6720179ecgecttgaaeggttggeggtyttggaggeateeggggettygtgacegggagateteggecteaaca6840180aegtettgggegeacettggecagetteaaeggegteteggegaetteeaegecateegettgegeteaggecateeggegaateegececatea6900181eggegttgggttgatettgtggtegeaceggttggaggtttgggggggtttggggggggggttggtgtgggggggggggggggggggggggg	168	ggttttcgat	ccgcgcgcga	atgcactgtc	aatggccaag	tagaagtccc	cgctggtggc	6180
171gcagccgatcgaggatgctggcggcggtggtgtgetcgggcagagatcgcccccattgtt6360172cgaagggcaatgcaggggatgccagggatgcagggggcggggcgacgtagccagac6420173ggaacaacagttgagtcccggtgtcgtcgagcgggggcgacgccgatctcgcccaagtga6480174ccagatccgcgcggagcaggtgtcgatgatcttgccgacggtgttgtcggccaagccg6500175ggtagaggacctggttgtgccgaatccattcaggtatgacggggcaatga6660176cggcaggtgctgttgtgcccgaatccattcaggtagtcgacgtggaccgggaaggtg6720178cggtgatcgaacgttgggggtgttggagcatgcagggcaggaaggtc6720179cggccttgaacgttggcggtgttggagcttggtggccgggaaggtg6720179cggcttgaaacggttggcggtgttggagcttggtggccgggaaggtg6720179cggccttgaacggttggcggtgttggagcttggtggccgggaaggtggctcaacca6720179cggcgttgaacggttgggggtgttggagcttggtggcgcttggtggccgggaaggtggcctcaacca6840180acgttgtgcggtgttggaggttgttggagcttggtggcgggcgattctggcctcaacca6840181cggcgttgggcgcacgtggttgcaccggttggtgtctggtggtgtctggggagtgtgggtggtgtctcgccgggtgtgggtggtgtgtgggtggtgtgtgtgggtgtgtgtgtgggtggtgtgtgtgggtgtgtgtgtgggtgtgtgtgtgggtgtgtgtgtgtgggtgtgtgtgtgtgggt	169	cagcagaagt	ccccactccg	ctgcgggtgg	ttggctaatt	cttggcggct	cccttcttgt	6240
cgaagggcca atgcgaggcg atggccaggg agcggcgca gccacgggcg ggaacacaag ttgagtcccg gtgtcgtcga gcgggcgaa gccgatctcg tccaagatga 6480 ccagatccgc gcggacagg gtgtcgatga tcttgccgac ggtgttgtgcg gccaggccgc 6540 from ggtagaggac ctcgatcagg tcggcgggg tgaagtaggc gactttgaat ccggcgtgga 6600 from cggcagcgtg ccgcagccg atgagcagg gacttttgac cggtacaaggt gactttgac cggcaagggg gggcaatga 6660 from ccgccaggtt ctgttgtgcc cgaatccatt ccaggctcga caggtagtcg aacgtgggcg 6720 from cggcgtgatcga cggttgggg gtgttggagg cattggggg caggagggggggggg	170	ggtcggcgtg	gcgcatccgg	taggactcgc	cggaggtgac	gacgatgctg	gcgtggtgca	6300
173ggaacaacagttgagtccggtgtcgtcgagcggggcgaagccgatctcgtccaagatga6480174ccagatccgcgcggagcagggtgtcgatgatcttgccgacggtgtttgtcggccaggccgc6540175ggtagaggaccccgcagcgatgagcaggttgaattagacgactttgaatccggcgtgg6600176ccgcaagttccgccagcgatgagcaggtgacttttgacccggcatgtg6600177ccgccaggttctgtttgcccgaatccattccggctgacaggtagtcgaacgttggctg6720178cggtatcgacgatccgtggtgttgaggcatcgcgggcatggaattgcgggaaaggctg6780179cggccttgagacggttggcggtgttggaggcatcgcgggcagcgatctcggggaaaggctg6840180acgtcgggggcgacacgtggccaacgtgttggcactggcgacttgaacacctcgg6900181cggcgttgggcgcaaggacggttgccacgggttgtcatgggtggtcatgaggccgtcaaaggtcacgac6900181cagcgttgggcgcagggacggtggccaccgggttgtcaacgggtgtgtcatgggtggtgtcatgaggccgcacgac6900183gtcgttgtgtttgagccggggggcttggagggtcgagcggggttcgagcggggggtggtgtcatgggtggtgtcatgggtgagccgacgggcagcacgacg7080184cacgagttgggcagcgggggcggggggtgtggggtgggggggccagaacgggcacaggacggcacaggacgccaatgagcag7360186agcetttcccgtagaggattttcggggggaccgacgacgagggttggggtctgggtcccaatgggc </td <td>171</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	171							
ccagatcogc geggagcagg gtgtegatga tettgcegae ggtgttgteg gecaggcege 6540 ggtagaggae etegateagg teggeggegg tgaagtageg gaetttgaat eeggegtgga 6600 cegecaggetg eeggagcegg atgageaggt gaettttgee eggateeagg ggecaatga 6660 cegecaggte etgttgtgee egaateeatt eeaggetega eaggtagteg gggaaggetg 6720 cegecaggte etgttgtgee egaateeatt eeaggetega eaggtagteg gggaaggetg 6780 cegecatgag aeggttggeg gtgttggagg eateggagget ettggtgaee gggaaggetg 6780 cegecatgag aeggttggeg gtgttggagg eateggegge agegateteg gggaaggetg 6800 aegteegaag gateteetee ggtgteeage gttgegtett ggegaettge aacacetegg 6900 aeggegttgeg gegeaeegg ggggeteea aeggeggete aggtegaeeg ggtggtggtg ttgatettgt aggeeteea eggaggggte tegaeggtg gegeaeege 7020 ageggtggtg ttgatettgt aggeeteea eggaggggte tegaeggtg geagateeg 7080 gegeaegteg geageegga aeggggggtg tegaegggggggggg	172							
ggtagaggac ctcgatcagg tcggcggcgg tgaagtagcg gactttgaat ccggcgtgga 6600 cggcagcgtg cccgcagccg atgagcaggt gacttttgcc cgtaccaggt gggccaatga 6660 cggcaggtt ctgttgtgc cgaatccatt ccaggctcga caggtagtcg aacgtggctg 6720 cggcttgag cgatccggtg acgtcgaacc cgtcgagggt cttggtgacc gggaaggctg 6780 cggccttgag acggttggcg gtgttggagg catcggaggt cttggtgacc ggcagatcgg ggccaacca 6840 acgtccgcag gatctcctc ggtgtccagc gttggcgt ggcgacttgc aacacctcgg 6900 acgtcgtgcg gcgcaccgtg gccagcttca accgccgcag cgccggtca aggtcagcag 6960 ccagcggttgc cgccgaggac ggtgccaccg gcttggcagc ggtggtcatg aggccgtcc 7020 ccagcggtgc cgccgaggac ggtgccaccg gcttggcagc ggtggtcatg aggccgtcc 7020 stag gtcggtggt ttgatcttgt aggcctccaa cgagcgggt tcgacggtg gcagatcgag 7080 cacgagtgcg tcgccggcgg ggcgggttg tggggtgcg ggcgcggcg ccaggatcga 7140 sgcgcacgtcg gcagcgcga accggcgaa cgcaaccgcc cggcgcagcg ccaggatcga 7140 sgcgcatgtc ccgcggggg caccgaggg gaccacgac ggcgcagagg ccaaggacg 7260 sgcacgttcg gcgggggg caccaaggac gaccaccgc ggcgcagcg gtctgggtc 7260 sgcgctgtc tctgcggg ggcgagat tcggaggtcg ggcgggtg ggcgggggggggg	173	ggaacaacag	ttgagtcccg	gtgtcgtcga	gcggggcgaa	gccgatctcg	tccaagatga	6480
cggcaggtg cccgcagccg atgagcaggt gacttttgcc cgtaccaggt gggccaatga 6660 ccgccaggtt ctgttgtgcc cgaatccatt ccaggctcga caggtagtcg aacgtggctg 6720 cggctgatcga cgatccggtg acgtcgaacc cgtcgagggt cttggtgacc gggaaggctg 6780 cggccttgag acggttggcg gtgttggagg catcgcggc agcgattccg ggcctcaacca 6840 acgtcgcag gatctcctcc ggtgtccagc gttgcgtct ggcgacttgc aacacctcgg 6900 ccagcgtgc cgccagaggac ggtgccaccg gcttggagg ggtggtcatg aggtcagcag 6960 ccagcggtgc cgccagaggac ggtgccaccg gcttggagg ggtggtcatg aggccgtcc 7020 ccagcggtgc cgccagaggac ggtgccacca ggtggcagcg ggtggtcatg aggccgtcc 7020 gtcggtgtg ttgatcttgt aggcctccaa cgagcggggt tcgacggtgg gcagatcgag 7080 sqcqaagtgg tcgccggcgg ggcggggttg tgggggggggg	174	ccagatccgc	gcggagcagg	gtgtcgatga	tcttgccgac	ggtgttgtcg	gccaggccgc	6540
ccgccaggtt ctgttgtgcc cgaatccatt ccaggctcga caggtagtcg aacgtggctg 6720 cggtgatcga cgatccggtg acgtcgaacc cgtcgagggt cttggtgacc gggaaggctg 6780 cggccttgag acggttggcg gtgttggagg catcgcggc agcgatctcg gcctcaacca 6840 acgtccgcag gatctcetcc ggtgtccagc gttggcgcg ggcggcttcc aacacctcgg 6900 acggcgttgcg gcgcaccgtg gccagcttca accgccgcag cgccgctca aggtcagcag 6960 ccagcggtgc cgccgaggac ggtgccaccg gcttggcagc ggtggtcatt aggccgtcc 7020 gtcggtggtg ttgatcttgt aggcctccaa cgagcgggt tcgacggtgg gcagatcgag 7080 ccagcagtgcg tcgccggag accggcggggttg tgggtgccg ggcgggggggggg	175	ggtagaggac	ctcgatcagg	tcggcggcgg	tgaagtagcg	gactttgaat	ccggcgtgga	6600
cggtgatega egateeggtg acgtegaace egtegaggt ettggtgace gggaaggetg 6780 cggcettgag acggttggeg gtgttggagg categeggge agegateteg geeteaacea 6840 acgteegeag gateteetee ggtgteeage gttgegtett ggegaettge aacacetegg 6900 cggegttgeg gegeacegtg geeagettea acegeegeag egeegegtea aggteageag 6960 ccageggtge egeegaggae ggtgeeaeeg gettggeage ggtggteatg aggeegtee 7020 gteggtggtg ttgatettgt aggeeteeaa egagegggte tegaegggg geagategag 7080 cacgagtgeg tegeeggegg ggeggggttg tgggtgeeg gegeeggggg eagategag 7140 acegagtgeg tegeeggegg egeegggaa eegeegeege eggeegggg eegeeggggg eggegggggg	176	cggcagcgtg	cccgcagccg	atgagcaggt	gacttttgcc	cgtaccaggt	gggccaatga	6660
cggccttgag acggttgcg gtgttggagg catcgcggc agcgatctcg gcctcaacca 6840 acgtccgcag gatctcctcc ggtgtccagc gttgcgtctt ggcgacttgc accacctcgg 6900 cggcgttgcg gcgcaccgtg gccagcttca accgccgcag cgccgcgtca aggtcagcag 6960 ccagcggtgc cgccgaggac ggtgccaccg gcttggcagc ggtggtcatg aggccgtccc 7020 gcggtgtgg ttgatcttgt aggcctccaa cgagcgggtc tcgacggtgg gcagatcgag 7080 ccagagtgcg tcgccggcgg ggcggggttg tggggtgccg gcgccggcgg ccaggatcga 7140 gcgcacctgc gcagcgcgg accgaggac cgccaaccgc cggcgcagcg cgtcaatcaa 7200 agcctgttcg ccgtgggcg cgccaaggcc gagcagaatg tcgagttcgg attcagtcg 7260 ggtgttgccg atcgcagcag caccgacgag gaactgctgc gcgcggtg gtctgggtcc 7380 gcgtatgtc tctgcttgg ttttcgggcg aggaccaccg gagggtgcgg gtctgggtcc 7380 gcgtagtgt tcatcgagga tggacacctc acctgggctg acgagctcg gctcggcac 7440 ggtggacccg gtcgaggt ccaacggat cagggcgca tgatcgacca ccaccgccac 7500 ggtggcaccg acgagccgt gaggcaccga gcaccgacc gaggcgcac ggcagggcag 7620 ggaggccgtcg accttaccgc gcaccgaccc cgagccgatc gcgcgcgca aggacccgac 7500 ggtggaccgt gcattaccgc cgtcaaccaa gcgaccgt ggcaccgca aggaccgtag 7760 ggtggaccgt gcattaccgc cgtcaaccaa gcgaccgt ggcaccgca aggaccgtag 7620 cccctcaag acggtcgct cgtcaaccaa gcgaccgc tgggcgcgca agatctccga 7680 gtggaccgt gcaccgc tcaccggcta acgagctc tgggcgcac aggaccgtag 7740 gcgacctgc tcaccggcta acgagctc ggcaccgac tggcaccgca ggcaccgtag 7740 gtcgacctgc tcaccggcta acgcacctc ggcaccgac ggcaccgcac ggcaccgaa ggcaccgtag 7740	177	ccgccaggtt	ctgttgtgcc	cgaatccatt	ccaggctcga	caggtagtcg	aacgtggctg	6720
acgteegeag gateteetee ggtgteeage gttgegtett ggegaettge aacacetegg 6900.  181 eggegttgeg gegeaecgtg geeagettee acegeegeag egeegegtee aggteegeag 6960  182 ecageggtge egeegaggae ggtgeeaecg gettggeage ggtggteatg aggeegtee 7020  183 gteggtggtg ttgatettgt aggeeteeae egagegggte tegaeggtg geagategag 7080  184 eacgagtgeg tegeegegg ggegggttg tggggtgeeg gegeegggg ecaggatega 7140  185 gegeaecgteg geageggae aceggegaae egeeaaecge eggeegageg ecaggatega 7200  186 ageetgtteg eegtgggegg egeeaaggee gageagaatg tegagteeg egteaateae 7200  187 ggtgttgeeg ategeageag eacegaegegaae eggeaeaege gageagaetg tegagteeg gteteggte 7260  188 gaategtte tetgettggg ttteeggeg aggaeeaege gagggtgegg gteteggtee 7380  189 gtegtagtgt teategagae tggaeaeete acetgggetg aegagetegt geteggeeae 7440  190 gateaeaeeg gtegeaggt ecaaeaggat eagggegeea tgategaeea ecaeegeeae 7500  191 ggtggeaeeg acettaegge geaeegaee eggaeegae gteggegea gegagggeag 7620  192 gaggeegteg acettaegge eggeaeeea eggaeegee ggeaeegea ggaeegeae ggagggeag 7620  193 eteceteaag aeggtgeget eggeaeeae tagttgeee tgggegtga gggeaegtag 7740  195 gtegaeetge teaeeggeta aegaeete ggeeaeeea ggeaeegea gggeaeegaa gggeaeega 7740	178	cggtgatcga	cgatccggtg	acgtcgaacc	cgtcgagggt	cttggtgacc	gggaaggctg	6780
ccagcgttgc gcgcaccgt gccagcttca accgccgag cgccgcgtca aggtcagcag 6960 ccagcggtgc cgccgaggac ggtgccaccg gcttggcagc ggtggtcatg aggccgtcc 7020 gtcggtggtg ttgatcttgt aggcctcaa cgagcggtc tcgacggtgg gcagatcgag 7080 cacgagtgcg tcgccggcg ggcgggttg tggggtgccg gcgccggcg ccaggatcga 7140 gcgcacgtcg gcagcgcga accggcgaaa cgcaaccgcc cggcgcagcg cgtcaatcaa 7200 agctgttcg ccgtgggcgg cgccaaggcc gagcagaatg tcgagttcg atttcagtcg 7260 agctgttcg ccgtgggcgg caccgacgag gaactgctgc gcttcggttc ccaatggca 7320 ggtgttgccg atcgcagcag caccgacgag gaactgctgc gcttcggttc ccaatggca 7320 gaatcgttc tctgcttggg ttttcgggcg aggaccaccg gagggtgcgg gtctgggtcc 7380 gcgtagtgt tcatcgagga tggacacctc acctgggctg acgagctcg gctcggcac 7440 ggtggcaccg gtcgcaggtt ccaacaggat cagggcgca tgatcgacc caccgccac 7500 ggtggcaccg acgagccgt gaggcacca gagccgtac ggcacggcg agatcgcag 7620 gaggccgtcg accttacggc gcaccgaccc cgagccgatc ggcacggcg agatctccga 7680 gtggaccgtg gcattgacct cggcgcacca tagttgcgc tgggcgtaa ggcacgtag 7740 gtcgacctgc tcaccggcta acgcagctc ggtcagcac ggcaccgaa ggtcgtcctg 7800	179	cggccttgag	acggttggcg	gtgttggagg	catcgcgggc	agcgatctcg	gcctcaacca	6840
ccagcgttgc gcgcaccgt gccagcttca accgccgag cgccgcgtca aggtcagcag 6960 ccagcggtgc cgccgaggac ggtgccaccg gcttggcagc ggtggtcatg aggccgtcc 7020 gtcggtggtg ttgatcttgt aggcctcaa cgagcggtc tcgacggtgg gcagatcgag 7080 cacgagtgcg tcgccggcg ggcgggttg tggggtgccg gcgccggcg ccaggatcga 7140 gcgcacgtcg gcagcgcga accggcgaaa cgcaaccgcc cggcgcagcg cgtcaatcaa 7200 agctgttcg ccgtgggcgg cgccaaggcc gagcagaatg tcgagttcg atttcagtcg 7260 agctgttcg ccgtgggcgg caccgacgag gaactgctgc gcttcggttc ccaatggca 7320 ggtgttgccg atcgcagcag caccgacgag gaactgctgc gcttcggttc ccaatggca 7320 gaatcgttc tctgcttggg ttttcgggcg aggaccaccg gagggtgcgg gtctgggtcc 7380 gcgtagtgt tcatcgagga tggacacctc acctgggctg acgagctcg gctcggcac 7440 ggtggcaccg gtcgcaggtt ccaacaggat cagggcgca tgatcgacc caccgccac 7500 ggtggcaccg acgagccgt gaggcacca gagccgtac ggcacggcg agatcgcag 7620 gaggccgtcg accttacggc gcaccgaccc cgagccgatc ggcacggcg agatctccga 7680 gtggaccgtg gcattgacct cggcgcacca tagttgcgc tgggcgtaa ggcacgtag 7740 gtcgacctgc tcaccggcta acgcagctc ggtcagcac ggcaccgaa ggtcgtcctg 7800	180	acgtccgcag	gatctcctcc	ggtgtccagc	gttgcgtctt	ggcgacttgc	aacacctcgg	6900.
ccagcggtgc cgccgaggac ggtgccaccg gcttggcagc ggtggtcatg aggccgtccc 7020 gtcggtggtg ttgatcttgt aggcctccaa cgagcggtc tcgacggtgg gcagatcgag 7080 cacgagtgcg tcgccggcgg ggcgggttg tggggtgccg gcgccggcgg ccaggatcga 7140 gcgcacgtcg gcagcgcgga accggcgaaa cgcaaccgcc cggcgcagcg cgtcaatcaa 7200 agcctgttcg ccgtgggcgg cgccaaggcc gagcagaatg tcgagttcgg atttcagtcg 7260 agcctgttcg ccgtgggcgg caccgacgag gaactgctgc gcttcggttc ccaatggca 7320 ggtgttgccg atcgcaggag ttgcgacgag gaactgctgc gcttcggttc ccaatggca 7320 accgacgtgg ttcgcaggagaaccaccaccaccaccaccaccaccaccacca	181							
gtcggtggtg ttgatcttgt aggcctccaa cgagcggtc tcgacggtgg gcagatcgag 7080 cacgagtgcg tcgccggcgg ggcggggttg tggggtgccg gcgccggcgg ccaggatcga 7140 gcgcacgtcg gcagcgcga accggcgaaa cgcaaccgcc cggcgcagcg cgtcaatcaa 7200 agcctgttcg ccgtgggcgg cgccaaggcc gagcagaatg tcgagttcgg atttcagtcg 7260 ggtgttgccg atcgcagcag caccgacgag gaactgctgc gcttcggttc ccaatgcgca 7320 gaatcgtttc tctgcttggg ttttcgggcg aggaccacgc gagggtgcgg gtctgggtcc 7380 gcgtagtgt tcatcgagga tggacacctc acctgggctg acgaccgc gctcggccac 7440 ggtggcaccg gtcgcaggtt ccaacaggat cagggcgca tgatcgacca ccaccgccac 7500 ggtggcaccg acgagccgct gaggcaccga gtaacgagct gagccgtaac ggatgcacga 7560 ggtggcaccg accttacggc gcaccgaccc cgagccgatc gtcggccac gcgagggcag 7620 ggtggaccgtg gcattgacct cgcaccac tagttgcgcc tgggcgtaa gggcacgtag 7740 gtcgacctgc tcaccggcta acgagctc ggtcagcac tgggcgcaa gggcaccgtag 7740 gtcgacctgc tcaccggcta acgagctc ggtcagcac tgggcgcaa gggcaccgtag 7740 gtcgacctgc tcaccggcta acgagctc ggtcagcac ggcaccgcaa ggtcgtcctg 7800	182							
gegeacgteg geagegga aceggegaaa egeaacegee eggegaege egteaateaa 7200 ageetgtteg eegtgggeg egeeaaggee gageagaatg tegagttegg attteagteg 7260 ggtgttgeeg ategeageag eacegaegag gaactgetge getteggtte eeaatgegea 7320 gaategtte tetgettggg ttttegggeg aggaecaege gagggtgegg gtetgggtee 7380 gegeageggegggggggggggggggggggggggggggg	183							
gegeacgteg geagegga aceggegaaa egeaacegee eggegaege egteaateaa 7200 ageetgtteg eegtgggeg egeeaaggee gageagaatg tegagttegg attteagteg 7260 ggtgttgeeg ategeageag eacegaegag gaactgetge getteggtte eeaatgegea 7320 gaategtte tetgettggg ttttegggeg aggaecaege gagggtgegg gtetgggtee 7380 gegeageggegggggggggggggggggggggggggggg	184	cacgagtgcg	tcgccggcgg	ggcggggttg	tggggtgccg	gcgccggcgg	ccaggatcga	7140
ggtgttgccg atcgcagc caccgacgag gaactgctg gcttcggttc ccaatgcgca 7320 gaatcgtttc tctgcttggg ttttcgggcg aggaccacgc gagggtgcgg gtctgggtcc 7380 gtcgtagtgt tcatcgagga tggacacctc acctgggctg acgacctcgt gctcggccac 7440 gatcacaccg gtcgcaggtt ccaacaggat cagggcgca tgatcgacca ccaccgccac 7500 ggtggcaccg acgagccgt gaggcaccga gtaacgagct gagccgtaac ggatgcacga 7560 gaggccgtcg accttacggc gcaccgaccc cgagccgatc gtcggccgca ggagggcag 7620 gtggaccgtg gcattgacct cggcgacca tagttgcgcc tgggcgtag gggcacgtag 7740 gtcgacctgc tcaccggcta acgcagctc ggtcagcacc ggcaccgacc ggcaccgaac gggcaccgaa gggcaccgtag 7740 gtcgacctgc tcaccggcta acgcagctc ggtcagcacc ggcaccgca ggcaccgca ggtcgtcctg 7800	185							
ggtgttgccg atcgcagc caccgacgag gaactgctg gcttcggttc ccaatgcgca 7320 gaatcgtttc tctgcttggg ttttcgggcg aggaccacgc gagggtgcgg gtctgggtcc 7380 gtcgtagtgt tcatcgagga tggacacctc acctgggctg acgacctcgt gctcggccac 7440 gatcacaccg gtcgcaggtt ccaacaggat cagggcgca tgatcgacca ccaccgccac 7500 ggtggcaccg acgagccgt gaggcaccga gtaacgagct gagccgtaac ggatgcacga 7560 gaggccgtcg accttacggc gcaccgaccc cgagccgatc gtcggccgca ggagggcag 7620 gtggaccgtg gcattgacct cggcgacca tagttgcgcc tgggcgtag gggcacgtag 7740 gtcgacctgc tcaccggcta acgcagctc ggtcagcacc ggcaccgacc ggcaccgaac gggcaccgaa gggcaccgtag 7740 gtcgacctgc tcaccggcta acgcagctc ggtcagcacc ggcaccgca ggcaccgca ggtcgtcctg 7800	186	agcctgttcg	ccgtgggcgg	cgccaaggcc	gagcagaatg	tcgagttcgg	atttcagtcg	7260
gaategttte tetgettgg ttttegggeg aggaceaege gagggtgeg gtetgggtee 7380 gtegtagtgt teategagga tggacaeete acetgggetg aegagetegt geteggeeae 7440 gateaeaeeg gtegeaggtt eeaaeaggat eagggegea tgategaeea eeaeegeeae 7500 ggtggeaeeg aegageeget gaggeaeega gtaaegaget gageegtaae ggatgeaega 7560 gaggeegteg aeettaeegge geaeegaeee egageegate gteggeegea gegagggeag 7620 gtegaeegtg geattgaeet egteaaeeaa gegategttg ggeaeeggea agateteega 7680 gtegaeegtg geattgaeet eggegeaeea tagttgegee tgggegttga gggeaegtag 7740 gtegaeetge teaeeggeta aegagette ggteageage ggeaeegaa ggtegteetg 7800	187							
gtcgtagtgt tcatcgagga tggacacctc acctgggctg acgagctcgt gctcggccac 7440 gatcacaccg gtcgcaggtt ccaacaggat cagggcgca tgatcgacca ccaccgccac 7500 ggtggcaccg acgagccgt gaggcaccga gtaacgagct gagccgtaac ggatgcacga 7560 gaggccgtcg accttacggc gcaccgaccc cgagccgatc gtcggccgca gcgagggcag 7620 ctccctcaag acggtgcgct cgtcaaccaa gcgatcgttg ggcacggcg agatctccga 7680 gtggaccgtg gcattgacct cggcgcacca tagttgcgcc tgggcgtag ggcacgtag 7740 gtcgacctgc tcaccggcta acgcagctc ggtcagcagc ggcaccgcaa ggtcgtcctg 7800	188							
gatcacacg gtcgcaggtt ccaacaggat cagggcgca tgatcgacca ccaccgcac 7500 ggtggcaccg acgagccgct gaggcaccga gtaacgagct gagccgtaac ggatgcacga 7560 gaggccgtcg accttacggc gcaccgaccc cgagccgatc gtcggccgca gcgagggcag 7620 ctccctcaag acggtgcgct cgtcaaccaa gcgatcgttg ggcaccggca agatctccga 7680 gtggaccgtg gcattgacct cggcgcacca tagttgcgcc tgggcgttga gggcacgtag 7740 gtcgacctgc tcaccggcta acgcagcttc ggtcagcagc ggcaccgcaa ggtcgtcctg 7800	189							
ggtggcaccg acgagccgct gaggcaccga gtaacgagct gagccgtaac ggatgcacga 7560 gaggccgtcg accttacggc gcaccgaccc cgagccgatc gtcggccgca gcgagggcag 7620 ctccctcaag acggtgcgct cgtcaaccaa gcgatcgttg ggcaccggcg agatctccga 7680 gtggaccgtg gcattgacct cggcgcacca tagttgcgcc tgggcgttga gggcacgtag 7740 gtcgacctgc tcaccggcta acgcagcttc ggtcagcagc ggcaccgcaa ggtcgtcctg 7800	190							
gaggccgtcg accttacggc gcaccgaccc cgagccgatc gtcggccgca gcgagggcag 7620 ctcctcaag acggtgcgct cgtcaaccaa gcgatcgttg ggcacggcgc agatctccga 7680 gtcgaccgtg gcattgacct cggcgcacca tagttgcgcc tgggcgttga gggcacgtag 7740 gtcgacctgc tcaccggcta acgcagcttc ggtcagcagc ggcaccgcaa ggtcgtcctg 7800								
ctccctcaag acggtgcgct cgtcaaccaa gcgatcgttg ggcacggcgc agatctccga 7680 194 gtggaccgtg gcattgacct cggcgcacca tagttgcgcc tgggcgttga gggcacgtag 7740 195 gtcgacctgc tcaccggcta acgcagcttc ggtcagcagc ggcaccgcaa ggtcgtcctg 7800								
gtggaccgtg gcattgacct cggcgcacca tagttgcgcc tgggcgttga gggcacgtag 7740 gtcgacctgc tcaccggcta acgcagcttc ggtcagcagc ggcaccgcaa ggtcgtcctg 7800								
gtcgacctgc tcaccggcta acgcagcttc ggtcagcagc ggcaccgcaa ggtcgtcctg 7800								
	196							

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/705,911

DATE: 08/22/2002 TIME: 10:35:18

197	•		aagccatagt					
198			acaccacctt	tgaggcagcc	catccggtcg	gccaggatct	tggccggaac	7980
199		cccaccgatc						7995
		SEQ ID NO:						
		LENGTH: 44	35					
		TYPE: DNA		•				
			Mycobacteriu	ım				
	<400>	SEQUENCE:						
206			tgacctgagc					
207			agcgccaccg					
208			gtgagaccgc					
209			tgagaacccg					
210			cgccgagcta					
211			gtttaacacg					
212		gcgcgcgctt	gttcttgcac	tatgcagacc	tcactgacgg	cacccggttg	gtgaccctgc	420
213			cgacccggat					
214			gccagtgcat					
215			cctttctcgg					
216			tccgccaccg					
217			ggtcttctcg					
218			tggcatcttg					
219			cacgcgtgcc					
220			cgatgcgatc					
221			gcaagcgcct					
222			gttcgctcaa					
223			cgaccgctat					
224			ccagtcactc					
225			cgcggacatc					
226			tggttggggc					
227			tatatcgccg					
228			gggttcacca					
229			acgtttgatt					
230			ggcggcatca					
231			cagaccaatt					
232			tcgtcatgca					
233			ggccctttgg					
234			gttcaggcgg					
235			tacggacccg					
236			cgatatgagg					
237			ccgcggcgcg					
238			catttcgatg					
239			atcgcagaca					
240			aaacccgatg					
241			cgcccgcgaa					
242			gccgatgccg					
243		ggccggacgg	gtagggcgac	ctgccatcga	gtggtacggc	agtcgcctgg	ccggcgaggc	2280
244			tgggagtatc					
245			cgccagctcg					
246		cggtgtggca	cgaccacgca	agctcgaacc	gactcgtttc	ccaatttcgc	atgctaatat	2460

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/705,911

DATE: 08/22/2002 TIME: 10:35:19